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A note on Eteocretan *phi* or *koppa*[*]

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ABSTRACT

A grapheme found in three Eteocretan inscriptions has been identified as either phi or koppa. On epigraphic grounds the identification with phi in at least two of those inscriptions is suspect. On the other hand the distribution of the grapheme suggests initially that it cannot be koppa: it is found at word end, pre-consonantally and before non-back vowels but never before back vowels, while kappa is attested before /o/. This distribution remains unexplained, however, if it is identified as phi, but could be accounted for if the grapheme koppa were adopted to represent an Eteocretan labiovelar /k^{w}/ which had undergone (as is cross-linguistically common) dissimilatory loss of lip-rounding adjacent to [+rounded] vowels.

Keywords: Eteocretan, Crete, epigraphy, phonology

Eteocretan is the name given to the unknown, non-Greek language(s) of one surviving alphabetic inscription (and one surviving word in another inscription) from Dreros and five from Praisos, dating from between the seventh and second centuries BCE. The corpus is collected and comprehensively discussed by Duhoux (1982). Three of the inscriptions from Praisos (PRA 2, 3, 5) contain a sign, represented here as

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ϕ, which has alternatively been identified as phi (Conway 1901, 135; Schwyzer 1923, 402; Friedrich 1932, 147; van Effenterre 1946, 135 (or koppa); Davis 1967, 263-265; Duhoux 1982, 171-177; Jeffery 1990, 309, 310 ('doubtfully'; or koppa)) or koppa (van Effenterre 1946, 135 (or phi); Guarducci 1967, I:183,192; Jeffery 1990, 309 (or koppa)). Neither identification is without its difficulties.

The identification as koppa rests principally on the observation that the Cretan Greek alphabet (almost) completely lacks phi and khi, using instead π, κ for /p^h, k^h/ until the adoption of the Ionic alphabet in the fourth century.[1] Duhoux (1982, 172) notes that the usual Cretan form of koppa has the vertical stroke extending into but not above the circle, while our sign more closely resembles phi in having the vertical extend above; but that this is not an insuperable difficulty as there are examples of Cretan koppa resembling the latter. (The shape of the letter is a point to which I will return; the examples are illustrated in Figure 1.)

[1] The letter phi with a confirmed value /p^h/ is found only once, in a graffito from Itanos (*Inscr. Cret.* III, vii, 2; see also Guarducci (1967, I:192)) dated to the second half of the 6th century: it reads]μοῦν εγραφε με. A letter of shape ↾ is found twice in Eteocretan (DRE 1, PRA 1), as well as in an inscription from Sikinos where it clearly corresponds to χ = /k^h/ in the word κε↾αρισμενον = κεχαρισμένον (Jeffery 1949; 1990, 39f., 322); Jeffery argues that since the alphabets of Sikinos and Crete are the same, its value in Eteocretan must also be /k^h/, and that it is absent from Cretan *Greek* inscriptions because the Cretan dialect lacked the phoneme /k^h/ (as well as /p^h/). I do not believe that Jeffery is right that Cretan lacked /p^h/ and /k^h/, since it has /t^h/, written θ from the earliest inscriptions onwards, and uses ϕ, χ from the adoption of the Ionic alphabet. Jeffery (1990, 310) cites Buck (1955, 53) in support of the claim that Cretan 'had no aspirate in any case, either initial or medial', but Buck refers only to the phoneme /h/ and the lack of /k^h, p^h, t^h/ arising by sandhi in forms such as κατισταμεν. (Cretan τνατος = θνητός, τετνακος = τεθνηκός—see Buck (1955, 60)—are isolated and possibly conditioned by the following nasal.) Nevertheless, if Jeffery is right about the value of ↾, it would seem to be the case that the Cretan epichoric alphabet lacked the grapheme χ, since Eteocretan was forced to adopt a non-Greek sign to represent its own /k^h/ phoneme: Jeffery (1990, 322) comments that the sign ↾ 'may be the same as the very similar one in the non-Greek script of Phrygia and Lemnos'. If so, one could probably infer that the Cretan alphabet also lacked the grapheme ϕ, and its epigraphic absence is not a consequence of the lack of the corresponding phoneme.

Nevertheless, he adduces the following arguments in favour of an identification as phi:

(i) Velars are rare in Eteocretan ('χ est absent du corpus récent; γ est rare à l'époque archaïque et absent des textes récents', p.172), which makes it unlikely that the special sign koppa was used to denote an allophone of /k/ before a back vowel.

(ii) Later Eteocretan (by which he means PRA 2 and 3, respectively fourth and third or second centuries BCE) uses phi 12 times, which guarantees that 'ϕ était connu dans la vielle langue indigène' (p.172), the implication being that the sign in PRA 5 (sixth century BCE) is also phi.

(iii) The sequence -κο- occurs in PRA 1.4, while if the script had koppa we should expect it here, since in early Cretan ϙ is used to write /k/ before a back vowel.

(iv) Conversely Φ occurs at word-end before a word divider in PRA 5.3, but koppa should be used only before a back vowel. As the following word begins with ϙ- and not a vowel, it cannot be that an -ο, say, has been elided.

(v) Also in PRA 5.3, Φ occurs before α, an environment where in Cretan Greek orthography we would expect κ rather than ϙ. (And one could add that in PRA 3.8 Φ is followed by ι, again an environment where we would not expect ϙ.)

(vi) The argument that Cretan did not have phi is negated because it is undoubtedly attested in a graffito from Itanos (*Inscr. Cret.* III, vii, 2; see n. 1) from the second half of the sixth century, and since Itanos is some 20km to the north east of Praisos, it is entirely conceivable that the letter was transmitted from there.

It is true that signs for velars are rare in Eteocretan. If the sign ⅄ is correctly identified as /k^h/ (see above, n. 1), it is attested twice (DRE 1, PRA 1); γ is attested only twice, both times on PRA 1 (sixth century). However κ, attested 14 times, is hardly rare (no rarer than our Φ, attested 13 times). In any case, one should be extremely wary of judging which phonemes did or did not exist based on grapheme frequencies in a corpus as small as this.

The second point, that ϕ was known in more recent inscriptions is simply begging the question, since the sign under discussion is in fact

our 𐤒; and even if 𐤒 = ϕ in some or all of the cases in PRA 2 and 3, that does not necessarily mean it is in PRA 5.

Points (iii–v) are more compelling: it must be conceded that they rule out the possibility that 𐤒 is fully the equivalent of koppa (i.e. a representation of the allophone of /k/ found before a back vowel). If we are to accept the sign as ϕ, however, we must explain how Eteocretan acquired the letter when it was absent from Cretan. Is the Itanos graffito the 'missing link'?

I think the answer must be no. The graffito is roughly contemporary with PRA 5 and the two inscriptions are epigraphically similar. Both are written sinistroverse and use the archaic letter forms: PRA 5 has 𐤔 (san) for /s/ and characteristically Cretan 𐤉 for /i/, while the graffito uses 𐤌 for /m/ and 𐤍 for /n/, although /e/ is 𐤄 or 𐤄 instead of typical archaic Cretan 𐤇. Crucially, however, in the graffito phi has the shape ⊕, a circle the full height of the other letters with a vertical line entirely contained within it, whereas the sign on PRA 5 is much closer to typical Cretan koppa, 𐤒, with a smaller circular element in the top half of the line, differing only in having the vertical stroke extend slightly above its circumference (Figure 1a). Even if we were to discount Guarducci's suggestion (1967, I:192) that the graffito may be an import from elsewhere, possibly Rhodes, it remains very doubtful whether this single example of a physically very different sign could provide the parallel for 𐤒 on PRA 5.[2]

Leaving aside for the moment the obvious problems raised by Duhoux's points (iii–v), the sign on PRA 5 physically resembles Cretan koppa rather than the Itanos phi, and there is no other contemporary model for it being phi. What about the signs on the other two inscriptions? PRA 2 and 3 use 'modern' letter forms M = /m/, N = /n/, Σ =

[2] If Eteocretan adopted a foreign symbol 𐤊 to represent its /k^h/ phoneme (see n. 1), one might argue that it is likely to have looked also for a sign for /p^h/ outside the Cretan alphabet; but if phi was borrowed from another Greek alphabetic tradition, why not also borrow khi (either in its 'blue' form X or its 'red' form 𐤗)? If on the other hand it is the case that the Cretan alphabet preserved the graphemes phi and khi but did not use them in dialect inscriptions because it lacked the corresponding phonemes (see note 1 above), and this was the source of 𐤒 = phi, one must ask why Eteocretan felt able to borrow the one but not the other; and equally why khi was not passed on to Sikinos.

/s/, Γ = /p/, I = /i/. There is adequate scope for Eteocretan to use phi = /pʰ/ at this stage, because it is imported into Crete with the rest of the modern letter shapes in the fourth century; but on PRA 2 the sign ϕ also closely resembles koppa. The following observations are based on the photograph in Duhoux (1982), the photographs and drawings in *Inscr. Creticae* III (on which Figure 1 is based), and on autopsy. In several instances the drawings differ significantly from what is visible in the photograph or on the stone.

PRA 2.1: In the sequence …επιμιτσϕα at the line end the round element is constrained to the top half of the line. The drawing (Figure 1b) clearly shows the the vertical extending through and above the round element. In Duhoux's photograph the vertical extends into it, but what may be its continuation above is much fainter. Under autopsy, there appears to be a scratch on the stone in the shape of a backwards 'S' rotated through ninety degrees, just above the circular element. Part of this may be what appears as the extended vertical in the photograph.

PRA 2.2 : In]δοϕ[•]ια… at the start of the line the right hand side of ϕ is lost in the damaged section. The curved element is constrained to the top half of the line. The drawing in *Inscr. Creticae* III shows the vertical extending above (Figure 1c), but it is not visible in the photographs or on the stone.

PRA 2.2: In the sequence …ϕϱαισοιι… the curved element is constrained to the top half of the line, and the engraver appears to have omitted the vertical stroke altogether (Figure 1d).

PRA 2.3 : In]ϕεστνμ… at the start of the line the left hand side of the sign is missing. The visible rounded element is constrained to the top half of the line, and is more curved on top than the corresponding part of ⟨ϱ⟩, favouring the identification as ϕ. The vertical stroke is lost (Figure 1e).

PRA 2.3 : In …δοϕσανο at the line end the round element is quite circular and at the top of the line. The drawing in *Inscr. Creticae* III shows the vertical stroke extending above (Figure 1f), but this is visible neither in the photographs nor on the stone.

PRA 2.4 : In …τεϕεσιατ̣ῳ̣ν at the line end the sign is not terribly clear, but the circular round element is constrained to the top half of the line. The vertical is not visible (Figure 1g).

PRA 2.6 : In …ϕραισον… the rounded part is at the top of the line. The vertical is shown in the drawing in *Inscr. Creticae* III as extending above (Figure 1h), but this is not clear from the photographs or on the stone.

PRA 2.7 : In …οϕτεν… the rounded element is at the top of the line. The vertical does not extend beyond it (Figure 1i).

PRA 2.10 : at line end, the ϕ is damaged such that only its left hand lobe is preserved. The rounded element is constrained to the top of the line (Figure 1j).

In the three instances in PRA 3 (Figure 1k–m), by contrast, the rounded element, which is flatter, is vertically centred. It does therefore more closely resemble standard Greek phi, especially in its form in the contemporary Greek inscription from Praisos, *Inscr. Creticae* III, vi, 8 (Figure 1n), and it is possible that we are dealing here with phi, imported with the rest of the Ionic alphabet in the fourth century. But the only model for Eteocretan phi in the sixth century is the solitary one from Itanos, which the letter in PRA 5 does *not* resemble. The examples in PRA 2 all more closely resemble that in PRA 5 than those of PRA 3 and the contemporary phi in Greek inscriptions from Praisos in the Ionic alphabet: the circular element seems to be aligned with the tops of the other letters even if the vertical extends slightly above it; and in line 7 it has the exact form of Cretan koppa. If, however Eteocretan ϕ is Cretan koppa, at least in PRA 5 and PRA 2, its occurrence before non-back vowels, consonants and at word-end is a problem. Is there a solution? I believe there is.

It is not only the case that ϕ occurs where koppa *cannot*; it also never occurs where koppa *can*: it is never found before the back vowels ο and υ. If we count the examples of PRA 3 as being the same letter, it is found 13 times. In a sample this small the absence of ϕο and ϕυ may, of course, be down to chance; but it is striking that of the 14 attestations of κ, five are found before ο. We might suspect that ϕ *cannot* occur in the very environment which is the preserve of koppa. On the face of it this is fatal for the identification ϕ = koppa, but the converse may in fact be true.

Suppose that Eteocretan had a voiceless labiovelar /k^{w}/ (a phoneme which, coincidentally, while present in Proto-Greek had been lost in all dialects by the time of the alphabet by various changes which resulted in dental, labial or velar reflexes). When the Eteocretans borrowed the

archaic Cretan alphabet, which Greek letter would they have used to represent /kʷ/? The most plausible candidate is koppa, which, while not itself actually a labiovelar, did represent an allophone of velar /k/ before back, rounded vowels. It is quite possible that the combination of velar articulation and allophonic lip-rounding represented the closest equivalent to a putative Eteocretan /kʷ/, motivating the adoption of koppa to write it.

Now it is a common dissimilatory change for a labiovelar to lose lip-rounding when followed by a rounded vowel. In Greek, for example, PIE **kʷ* became κ in pre-Mycenaean times when adjacent to [u]; and in Latin *-quŏ-* became *-co-* (thence eventually *-cu-* in final syllables). These developments can be analysed in terms of neutralisation or feature-mistiming: if a labial environment triggers a labialised allophone of a velar, the sequence of labiovelar + rounded vowel can be misanalysed as the result of labialisation of a velar—see Hock (1991, 113-114, 123, 135). If Eteocretan had a labiovelar, and if that labiovelar was written as φ, and if that labiovelar underwent loss of labialisation before a rounded vowel, that might explain the failure of φ to appear before ο and υ—assuming, of course, that the lack of φ before back vowels is not simply a matter of chance. Those are big 'ifs'; but they are not impossibilities, nor all that unlikely. If Eteocretan had /kʷ/ it is entirely plausible that it would have been written with koppa, and dissimilatory delabialization of labiovelars is cross-linguistically common.

Is it possible, then, that Eteocretan had a voiceless labiovelar? Of 451 contemporary languages recorded in the UPSID phonetic database[3], 68 (ca 15.08%) have /kʷ/ or /kʷʰ/ or both. The chances for Eteocretan might be better, however. That at least one non-Greek language of Crete in the second millennium BCE had labiovelars (or something sufficiently close to labiovelars as to be identified with them by Greek speakers) is shown by the fact that Linear B signs 𐀟 *qa*, 𐀪 *qe* and 𐀠 *qi*, whose consonant is /kʷ, kʷʰ, gʷ/, have antecedents in the Linear A syllabary. Of course, we cannot say that the Eteocretan attested in the first millennium descends from the language of Linear A; nor, if it does, can we be certain that it has preserved its labiovelars.

[3] http://web.phonetik.uni-frankfurt.de/upsid.html accessed 29.iii.MMXVII.

It is however interesting that PRA 2.2 and 2.6 contain the sequence …φραισο… which is tantalisingly close to the name of Praisos (Greek Πραισός) itself. Duhoux (1982, 173-174) very plausibly suggests that the Greek spelling preserves the original form of the name, while the spelling in PRA 2 reflects a change *p* > *f* in more recent Eteocretan, with φ chosen as the closest Greek equivalent to /f/. If φ = /kʷ/, however, an alternative presents itself, viz. that the Eteocretan spelling preserves the original form **Kʷraisos*, while the Greek spelling reflects the expected Greek development of /kʷ/ before a consonant (i.e. the name has become nativized and followed Greek phonetic developments). In support of the argument that the name originally contained a labiovelar, one might adduce here the two men's names *qa-ra-i-so* (KN V 466.1) and *qa-ra-si-jo* (MY Au 657.6), which could be in form ethnics derived from the native form of the toponym **Kʷraisos* (for bibliography, see *D.Mic.*, s.vv.); although one must accept Duhoux's observation (1982, 173, n. 68) (specifically on the identification with *qa-ra-i-so*) that '[i]l s'agit là d'une possibilité intéressante, mais qui échappe à toute démonstration.'

That Cretan Greek has abandoned the use of koppa by the late fifth century (Jeffery 1990, 309) could be used as a further objection to the identity of φ with koppa on PRA 2 and PRA 3. But this is a straw man. Cretan dialect abandoned the use of koppa because it represented a non-phonemic, allophonic variant of /k/ in certain environments; but if koppa had entered Eteocretan epigraphic practice to denote a fully phonemic /kʷ/ (or similar), there is every reason to suppose it would have kept the grapheme even after it changed its alphabet.[4]

The final verdict must be one of *non liquet*; but the facts remain that the Eteocretan letter in PRA 5 and PRA 2, at least, much more closely resembles Cretan koppa than the phi attested at Itanos; and that even if that single phi were sufficient to provide a model for the existence in Eteocretan of a grapheme for /pʰ/, it does not seem to have provided a model for the graphical form. If φ is instead koppa representing /kʷ/, the paradoxical lack of φ before ο and υ is perhaps explained, whereas it remains a mystery why phi should not be found before a back vowel.

[4] When Attic adopted the Ionic alphabet it did not of course keep the grapheme <H> to write the phoneme /h/ although it remained in pronunciation; but the case is not comparable, because the same grapheme was now used according to Ionic practice with the value /ɛː/.

The presence of /k^{w}/ in Eteocretan is of course a matter of speculation, and it can be objected that koppa does not represent /k^{w}/ in Greek. But it is equally a matter of speculation that Eteocretan underwent a change *p* > *f* (and an irregular one, note, since π is attested three times on PRA 2 and once on PRA 1; and even if restricted to the environment before *r*, PRA 2.8]μαπραιναιρεϱ[•][is an exception); nor does φ represent [f] in Greek at this date. It cannot be proven that ϕ is koppa representing /k^{w}/ rather than phi representing /f/, but this possibility has a certain explanatory power which makes it, to my mind, attractive.

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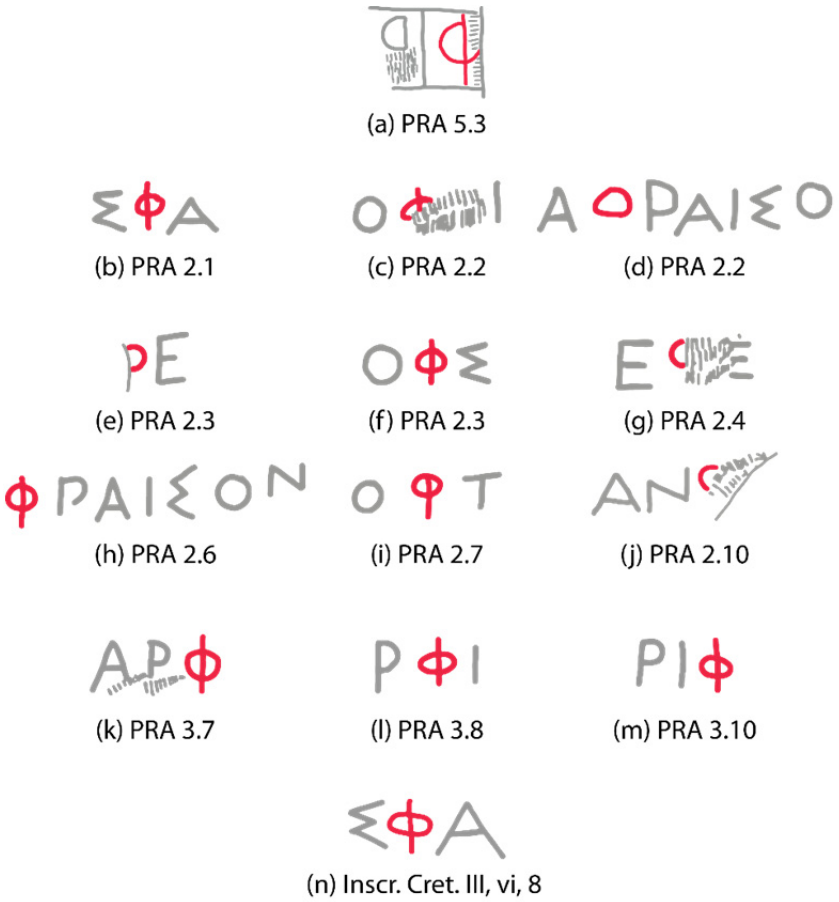

Figure 1. Shapes of grapheme ϕ in Eteocretan inscriptions (a–m), with shape of phi in 3rd century Greek inscription from Praisos (n) for comparison; all after the drawings in *Inscr. Cret.* III.